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within a predetermined period of time following the entry of the first stroke. For example, a user enters the lower portion of a bracket gesture and enters the upper portion of the bracket as separate strokes. If the upper portion is entered within a predetermined distance from the lower portion and if the upper portion is entered within a certain amount of time following the entry of the lower portion, then the CPU will assume that it is a multiple stroke gesture.

If the stroke is determined to be part of a multiple stroke gesture in step 220, then step 222 is implemented. In step 222, the previously-entered gesture portions of the multiple stroke gesture are added to the newly-inputted stroke. All of the strokes of the gesture are thus combined into a single gesture and are treated henceforth as a single stroke. The CPU assumes that a multiple stroke gesture does not include the circle-type gesture of step 76', and thus the process continues to step 86' and the fuzzy gesture recognition steps.

If the stroke is determined not to be a multiple stroke gesture in step 220, then the process continues at step 76' with the circle-type gesture recognition. The remaining steps of flow diagram 70' are similar in function and implementation to the corresponding steps described with reference to FIG. 3.

Although only one embodiment of the present invention has been described in detail, it should be understood that the present invention may be embodied in other specific forms without departing from the spirit or scope of the invention. For example, although one form of the invention has been primarily described with reference to circle-type gestures, it is equally suitable for use with other geometrical shapes. Similarly, other gestures besides the bracket and pigtail gestures described herein may be recognized by the present form of the invention, including letters and other symbols. Further, the described process for correlating a normalized stroke with a gesture prototype is only one of several possible correlation methods. Therefore, the present examples are to be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope of the appended claims.

What is claimed is:

1. A method for recognizing a gesture input on a display screen for a computer system, the method comprising the steps of:

- (a) receiving a stroke input by a user onto a computer screen, the stroke being represented as a string of points;
- (b) smoothing said stroke by reducing the number of points that represent the stroke such that the points of the smoothed stroke are located at least a threshold

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distance apart from one another, said smoothing step including the substeps of:

- (i) calculating a position for a new point that is positioned between two adjacent points in the stroke that are separated by less than the threshold distance; and
- (ii) replacing the two adjacent points that are separated by less than the threshold distance with the new point; and
- (iii) repeating steps (i) and (ii) until all of the remaining points in the stroke are separated by at least the threshold distance;
- (c) determining whether said smoothed stroke includes at least a predetermined minimum number of points;
- (d) calculating angles between adjacent segments of said smoothed stroke and calculating derivatives of said angles; and
- (e) determining whether said stroke substantially represents an ellipse, the ellipse determining step utilizing said angles and said derivatives of said angles and including the substeps of:
  - (i) determining whether said stroke substantially curves in one direction, wherein said stroke is not considered to substantially represent an ellipse when said stroke does not curve in one direction;
  - (ii) determining whether a point on said stroke that is within a predetermined portion including an end point of said stroke is within a predetermined distance of an opposite end point of said stroke, wherein said stroke is not considered to substantially represent an ellipse when said point is not within said predetermined distance of said opposite end point; and
  - (iii) summing said derivatives of said angles and checking whether said sum is within a predetermined range of values, wherein said stroke is not considered to substantially represent an ellipse when said sum is outside said range of values;

wherein steps (d) and (e) are only executed when said smoothed stroke includes at least said predetermined minimum number of points.

2. A method as recited in claim 1 further comprising the steps of:

- determining whether an object displayed on a computer screen is substantially overlapped by said smoothed stroke; and
- selecting said object when said object is overlapped by said smoothed stroke and said smoothed stroke substantially represents an ellipse.

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